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AUTHOR Rhodes, Elizabeth Moore

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ABSTRACT

This position paper describes a theoretical framework for learning that encompasses new conceptions of learning, namely learning as social practice, new views of the learner as self-directed, and paradigm shifts in learning as it is mandated in new social contexts. Social learning theory, especially that of situated learning, provides a new framework for discussing how technology has influenced learning. Interactive learning can be described as access to the Internet that enables dynamic, and less static, learning where direct exposure to experts in the field is possible and multimedia presentations facilitate various learning styles, and the learning model of transmission is replaced by a distributed learning model. Teacher education for the future must take technology into account; understanding how the educational use of computers influences patterns of thinking and contributes to changes in the symbolic underpinnings of culture should be considered an essential aspect of computer literacy. The information apartheid that divides poor children from others with respect to access to computers must be bridged immediately. (SLD)

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Elizabeth Moore Rhodes
Xavier University of Louisiana
1 Drexel Drive
504.483.7534 office
School/University Liaison
P.O. Box 99C
New Orleans, LA 70125
504.485.7903 fax
erhodes@xula.edu

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Risks and Opportunities in the Age of Information Technology: E-learning, Commercialization, and Measures of Success

The Impact of Technology in Changing our Perceptions of What and How People Learn

Technology has dramatically changed traditional views of how one learns, which has major implications for Teacher Education in America's institutions of higher education. Those responsible for preparing teachers for our nation's children must recognize that paradigm shifts in learning, views of the learner, and learning theory have occurred with the emergence of the Information Age. The ubiquitous nature of computing, the changing economy of our nation, the growing interest in the privatization of education, and the shift toward distributed learning environments call for a serious consideration of the Inforamtion Age's impact on universities in general, as well as the teacher education units within them.

This position paper is written on the brink of the new millennium, a time when the old computer culture of calculation has transformed into a culture of simulation. E-mail, e-commerce, e-travel are becoming common words in our communities. Education reform movements will take place in a culture of anytime, anyplace learning that can occur with sophisticated networks, telecommunications, and digital multimedia and can be delivered over the World Wide Web. This paper will describe a theoretical framework for learning that encompasses new conceptions of learning, namely learning as social practice, new views of the learner as self-directed, and paradigm shifts in learning as it is manifested in new social contexts.

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Learning theory

Social learning theory, and particularly situated learning, provides a new and excellent framework in which to discuss how technology has influenced learning. "By placing emphasis on the whole person, and by viewing agent, activity, and world as mutually constitutive, " Lave and Wegner in Situated Learning, Legitimate Peripheral Participation (1991), "give us the opportunity to escape from the tyranny of the assumption that learning is the

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reception of factual information.(p.1)" Lave and Wenger propose that "learning is a process of participation in communities of practice, participation that is at first legitimately peripheral but that increases gradually in engagement and complexity. Wenger in Communities of Practice (p.229), states "Learning cannot be designed - it can only be designed *for* - that is, facilitated or frustrated. Ultimately, learning belongs in the realm of experience and practice. It follows the negotiation of meaning; it moves on its own terms. Learning happens, design or no design."

Colleges of Education who adopt this conceptual framework as their conceptual framework would probably find little purpose in methods courses taught in university settings. These courses being taught out of context characterizes much of the current professional coursework in teacher preparation programs. Designing for learning in colleges of education may very well mean putting and directing all talents and resources in the design of social infrastructures that foster learning. This may translate into encouraging communities of practice within cohorts of preservice teachers, teacher education faculty revamping all course work peripheral to K-12 schools, and the university itself engaging in learning communities. At an extreme, it could also mean envisioning schools of the future that look and feel nothing like what we have to come to call school. "Teacher educators must consider an organizational design, or school, from the perspective of an architecture of learning based on engagement, imagination, and alignment." (Wenger, p. 242) If not, teacher training institutions will fall behind in the Information Age.

Learning theory, as does all theory, must have valid applications in practice. A further examination of paradigm shifts that have occurred under this new framework for learning, and a new view of the learner will help to substantiate the validity of the theory that describes learning as
communities of practice.

Paradigm shifts in learning

David, in Technology and Education Reform (1994), asserts that the paradigm shift in the education reform movement from traditional views of teaching and learning to new conceptions are more compatible with the early visions of technology's promise. In other words, the influence of computers in the classroom enables a shift from didactic to interactive learning, from teacher -centered to learner-centered, from fact teller to collaborator, from memorization to inquiry and invention, from quantity of memorized facts to quality of understanding. She states

that "Technology can stimulate and facilitate the introduction of project-based activities, student and teacher collaboration, and cross-disciplinary work."(p.172)

Tapscott, four years later, in Growing Up Digital (1998) adds the following views to the shift in learning paradigms due to the growth of the Internet. He describes a shift from linear to hypermedia learning, from instruction to construction and discovery, from absorbing material to learning to navigate and how to learn, from school to lifelong learning, from one size fits all to customized, self-directed learning. Turkle, in Life on the Screen (1997), extends further the influence of the Internet when she states, "We come to see ourselves differently as we catch sight of our images in the mirror of the machine. A decade ago, when I first called the computer a second self, these identity changing-transforming relationships were almost always one-on-one, a person alone with a machine. This is no longer the case. A rapidly expanding system of networks, links millions of people in new spaces that are changing the way we think, the nature of our sexuality, the form of our communities, our very identities. "(p.9)

The views of these three authors demonstrate how the influence of technology at various stages of advancement has impacted our views of schooling, of learning, of communicating, and even of our own identities. There are many projects that can document the effective uses of computers in classrooms, beginning in the early 1980's with the Apple Classrooms of Tomorrow (ACOT) to the sophisticated computer networks of today's Virtual High School. These progressive notions of learning have brought us to a definition of learning that at its basic level could be termed interactive learning. It is interactive learning that is most in keeping with communities of practice and social learning theory. Interactive learning could be described as: access to the Internet enabling dynamic, less static learning, where direct exposure to experts in the field is capable, where multimedia facilitates various learning styles, and where the learning model of transmission is replaced by a distributed learning model. The distributed learning model is the model of the Internet and the World Wide Web.

View of the learner

There is much in current educational literature describing the students of the future as diverse learners. The definition of diversity must be inclusive of growing numbers of students who have used computers as learning instruments, much like the baby boomers of a generation ago learned from television. Today, teachers who facilitate learning communities are forced in many classrooms to be the "mature" apprentices to the naturalized masters of information technologies, the students. Tapscott reports that children (the Net Generation, as he refers to them) are using digital media for entertainment, for learning, for communicating, and for shopping. It is the Net Geners, in our

schools today who are by and large the computer experts. Educational technologies can only be further enhanced with software designs that shift more of the control of the technology, and responsibility for learning back over to the student. The "stand alone" student is a new view of a learner, one who can self-direct, and use his or her interest to guide them to appropriate communities of practice.

Implications for Teacher Education

In a report that asks "Will new teachers be ready to teach in a digital age?" commissioned by the Milken Exchange on Education Technology (1999), it was revealed that "in general, teacher-training programs do not provide future teachers with the kinds of experiences necessary to prepare them to use technology effectively in their classrooms." It states further that "today's students live in a global, knowledge-based age, and they deserve teachers whose practice embraces the best that technology can bring to learning." (p.i) Not many teacher education faculty would disagree with that statement. Alternatively, there are probably not too many teacher education faculty who share Todd Oppenheimer's (July, 1997) opinion of the computer delusion. In his book, of the same title, he refers to computers in the classroom as a "dubious nostrum". These statements represent two extremes in opinion. For teacher education institutions to survive, in the present climate of privitization of once sacred public educational institutions, teacher education faculty are charged to reconsider a theoretical and practical framework that is in keeping with the new learner.

Conclusion

Technology is neither positive or negative, nor is it non-neutral --- Cultural contexts for technology exist. Understanding how the educational use of computers influences our pattern of thinking, and thus contributes to changes in the symbolic underpinnings of the culture, should be considered an essential aspect of computer literacy. Bowers (1995) states,

> "If computers themselves cannot be used to provide an educational, political, and moral sense of direction for schools, as his comment suggests, then it is necessary to take seriously the argument that the sense of direction for education must, in part, be based on a careful consideration of the problems we face as a society and the ameliorative role that schools should play."

Instead of focusing on technologies impact as positive or negative, let's admit the biases and think about its promise for doing what is more important - improving life for all.

The digital world, divided though it may be, will still affect most of our nation's children. In addition, if there is any hope for our nation's poor children, the information apartheid that potentially could exist, must be bridged immediately. Advocates for poor children must insist on community access to computers, and technology - rich learning environments, which will keep technology poor children from being information poor. In particular, public school educators, those who increasingly teach our nation's poor children, must guard against the hegemony of resources for learning and alienation from full participation in learning communities of the future.

Control and power issues are tantamount in pedagogical concerns for poor and under-served children in America's schools. Technology once thought to be the great educational equalizer, has faded into a digital divide that widens for the "have not's" of our children. It is ethically imperative that technology be in the hands of students who can foster democratization. It is important for students to learn to use technology to control and direct their academic learning. It is also important for students to control computer technology to effect meaningful and ethical change in and around their lives.

C. A. Bowers (1988) in, *The Cultural Dimensions of Computing: Understanding the Non-neutrality of Computing*, said it this way, "Faced with the futility of the moral and political relativism that usually overwhelms any attempt at clarifying our social priorities for reform, most teachers find making decisions about the use of technology in the classroom a more manageable process. I should like to go against the grain of this tendency by laying out the argument that the sense of direction for public schools must take account of those aspects of our culture that are problematic for all social groups. This is not a matter of reaching agreement on the design of a new culture; but it does involve identifying the most serious problems we face and a general sense of the direction in which we must move if the problems are to be ameliorated. This will provide us with a tentative conceptual compass for assessing how the use of computers in the classroom relate to the ongoing problem of cultural renewal." (p.4)

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